UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/429,297	10/28/99	OGINO	M 503.37770X00

020457
ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON VA 22209

MMC2/0913

EXAMINER	
MITCHELL, I	
ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 09/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/429,297	Applicant(s) OGINO ET AL.	
	Examiner James Mitchell	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *31 March 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *18 and 19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-17 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This office action is in response to preliminary amendment filed March 31, 2000.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-17, 20 drawn to device, classified in class 257, subclass 669.

II. Claims 18,19 drawn to process of manufacture, classified in class 438, subclass 123.

3. The inventions are distinct, each from the other because of the following reasons:

4. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process. For example, forming the protective film on wafer prior to the relaxing layer.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143). Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37

CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i)

7. During a telephone conversation with Bill Solomon on June 26, 2001 a provisional election was made with traverse to prosecute the invention of group I., claims 1-17 and 20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18 and 19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

8. Claim 17 objected to because of the following informalities: the word "are" between "chip are and" of Line 10 should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 2-9 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. With respect to claims 2-9 and 20, the "side planes...exposed outside" is indefinite as to what the planes are "outside of?"

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

13. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Feger et al. (U.S 6,130,472).

14. Feger discloses a chip (50) that inherently possesses circuits and electrodes for communicating the chip with an external source, a porous (Line 27, Column 5) polytetrafluoroethylene (PTFE) stress layer (52), a circuit layer that is defined by the top portion or layer of the PTFE which comprises metal lines and pads (56,58), an external electrode (64) formed thereon over a porous layer (46) wherein the circuit layer is connected to electrodes on said chip through a via hole, an organic PTFE (Lines 55-56,62-64, Column 5) protecting film (62b) on the plane opposite to said circuit layer, the side planes of said chip and the porous layer are exposed outside, and a copper filled via hole (54) which is inherently an anisotropic conductive material as indicated by the applicant (Page 13, Lines 13-14) connected to the electrodes on said chip and said circuit layer, the linear coefficient of a protecting film inherently the same as the linear coefficient of the stress layer since both are disclosed as being PTFE.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 6-8, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feger as applied to claims 3 and further in view of Takenuechi et al. (U.S 5,744,758).

17. Feger does not disclose a resin filled through hole; however Takenouchi utilizes a plated resin filled via hole (Lines 5-8, Column 3).

18. It would have been obvious to one of ordinary skill in the art to form the via hole of Feger with a resin filled via through hole, in order to enhance the electroconductivity with the circuit patterns as taught by Takenouchi (Lines 31-33, Column 7).

19. With respect to claims 7 and 8, a method of making characteristic is given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made. *In re Thorpe*, 227 USPQ 964 (Fed. Cir.1985). Case law makes it is clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, not the patentability of the process, and that an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" or not.

20. With respect to claim 20, it would have been obvious to form a module with a plurality of semiconductor devices as claimed in order to avoid damage to the module by preventing a plurality of semiconductor devices from being contaminated from metal atoms as disclosed in Feger (abstract).

21. Claims 9-13,15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feger in view of Bruce et. al. (U.S 6,107,107).

22. Feger discloses the elements stated in paragraph 12, but does not show the external terminals in a grid array.

23. However, Bruce utilizes external terminals in a grid array (Fig.1).

24. It would have been obvious to one of ordinary skill to form the external terminals of Feger in a grid array in order to decrease the size of the package (Lines 62-65, Column 1) for increased density.

25. With respect to claims 15-16 a method of making characteristic is given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made. *In re Thorpe*, 227 USPQ 964 (Fed. Cir.1985). Case law makes it is clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, not the patentability of the process, and that an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" or not.

26. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feger and Bruce as applied to claim 11 and further in view of Takenouchi.

27. Neither Feger nor Bruce discloses a resin filled through hole; however Takenouchi utilizes a plated resin filled via hole (Lines 5-8, Column 3).

28. It would have been obvious to one of ordinary skill in the art to form the combined semiconductor device of Feger and Bruce with a resin filled via through hole, in order to

enhance the electroconductivity with the circuit patterns as taught by Takenouchi (Lines 31-33, Column 7).

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Masashi (JP 10-027827), Makoto (JP 09-232256), Yamaji (U.S 6,171,887), Lee et al. (U.S 6,252,298), and Fukutake (JP 03068149).

The prior art discloses in Masashi a process where the chip and base are equivalent in size with the external terminals in a grid array, in Makoto the use of a circuit board bonded to a wafer prior to dicing, in Yamaji the use of a protective film on the backside of a chip, in Lee the use of bond pads, traces and metal lines to define a circuit layer, and in Fukatake the use of PTFE as a stress relaxing layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (703) 308-4083. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Carl Whitehead Jr.

CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

jmm
September 5, 2001